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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,341	02/17/2004	Kurt A. Carlsen	BUR920000061US1	9961
21918	7590	11/17/2006	EXAMINER	
DOWNS RACHLIN MARTIN PLLC			STOUFFER, KELLY M	
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BURLINGTON, VT 05402-0190			1762	

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/780,341

**Applicant(s)**

CARLSEN, KURT A.

**Examiner**

Kelly Stouffer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months, after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-30,32-35,37 and 38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-30,32-35,37 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. attached.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 26 September 2006 has been entered.

### ***Response to Arguments***

2. Applicant's arguments, filed 26 September 2006, with respect to the 35 USC 112 1<sup>st</sup> paragraph enablement rejections of claims 26-30 and 32-34 have been fully considered and are persuasive. The 35 USC 112 1<sup>st</sup> paragraph enablement rejections of claims 26-30 and 32-34 have been withdrawn.

3. Applicant's arguments with respect to the 35 USC 102 and 103 rejections of claims 19-30, 32-35, and 37-38 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's arguments filed 26 September 2006 with respect to the 35 USC 112 1<sup>st</sup> paragraph written description rejections of claims 26-30 and 32-34 have been fully considered but they are not persuasive. The Applicant argues that the specification provides support for the limitation in claim 26 of "the exhaust gas comprising a carrier

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gas and dopant gas" because the Background section only uses silane and arsine as examples. According to MPEP 2163.02, the objective standard for determining compliance with the written description requirement is "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." (*In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ 2d 1614, 1618 (Fed Cir 1989)) One of ordinary skill in the art would recognize that the Applicants would have possession of using silane as a carrier gas and arsine as a dopant gas, but not all carrier and dopant gases. The specification only provides the working example or using silane and arsine, and does not apply the method to all carrier and dopant gases. Additionally, MPEP 2163.05 teaches that broadening a claim raises the issue regarding whether the inventor had possession of a broader, more generic invention. As in *In re Sus* 306 F.2d 494, 504, 134 USPQ 301, 309 (CCPA 1962) the broader limitation is not necessarily taught by the specification where more narrow limitations are mentioned. Similarly *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996), "disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not reasonably lead those skilled in the art to any particular species." Instead, the present application only leads one of ordinary skill in the art to the species silane and arsine, and would not lead one of ordinary skill in the art to any carrier and dopant gas. Therefore, the 35 USC 112 1<sup>st</sup> paragraph written description rejections of claims 26-30 and 32-34 are maintained in this Office Action.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 26-30 and 32-34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 26, the Applicant claims the limitation of "the exhaust gas comprising a carrier gas and dopant gas." However, the specification only supplies support for using silane as a carrier gas and arsine as a dopant gas which does not include all carrier and dopant gases as claimed therefore the applicant does not describe to one skilled in the art that they had possession of using any carrier gas or any n-type dopant gas in the process. Additionally, MPEP 2163.05 teaches that broadening a claim raises the issue regarding whether the inventor had possession of a broader, more generic invention. As in *In re Sus* 306 F.2d 494, 504, 134 USPQ 301, 309 (CCPA 1962) the broader limitation is not necessarily taught by the specification where more narrow limitations are mentioned. Similarly *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1571, 39 USPQ2d 1895, 1905 (Fed. Cir. 1996), "disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not reasonably lead those skilled in the art to any particular species." Instead, the present application only leads one of ordinary skill in the art to

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the species silane and arsine, and would not lead one of ordinary skill in the art to any carrier and dopant gas.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 19, 23-26, 30, 32, 33, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent number 4735633 to Chiu.

With regard to **claims 19 and 26**, Chiu discloses a method for scrubbing an exhaust gas (abstract and column 1 et seq.) comprising a first chemical component and a second chemical component (which may be silane and arsine as required by **claims 23, 24, and 30** in column 4 lines 15-22) comprising the steps of flowing the exhaust gas through an enclosure defining a chamber having a length and a central axis extending along the length and containing a plurality of substrates spaced from one another along the length and oriented perpendicular to the central axis (see Fig 3 and column 5 lines 10-60), baffling (**claim 32**) to increase the residence time of the exhaust gas and flows the gas in a serpentine path (**claims 33 and 37**) within the chamber (again Fig. 3), and causing the first chemical component to be chemical vapor deposited onto the plurality of substrates (column 5 lines 10-60). The substrates are removable after deposition as required by **claim 25** in columns 5 and 6 lines 61-2.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 19, 26, 32-33 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent publication 2002/0100417 A1 to Suzuki et al.

With regard to **claims 19 and 26**, Suzuki et al. discloses a method for scrubbing an exhaust gas (abstract) comprising a first chemical component and a second chemical component (Table 1, includes what may be broadly considered a carrier and dopant gas) comprising the steps of flowing the exhaust gas through an enclosure defining a chamber having a length and a central axis extending along the length and containing a plurality of substrates spaced from one another along the length and oriented perpendicular to the central axis (see Fig 2 and paragraph 0047), baffling (**claim 32**) to increase the residence time of the exhaust gas and flows the gas in a serpentine pattern (**claims 33 and 37**) within the chamber (Fig 2 and paragraphs 0015 and 0016), and causing the first chemical component to be chemical vapor deposited onto the plurality of substrates (paragraph 0018).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
8. Claims 20-22 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu.

With regard to claims 20 and 27, Chiu includes all the limitations except removing the dopant gas from the exhaust after the carrier gas is removed. However, Chiu includes removing all gases and depositing them on the substrates (column 5 et seq.) in the procedure. One of ordinary skill in the art would have recognized at the time of the invention that the carrier and dopant gas would deposit on the substrates relative to their properties and concentrations. Therefore, it should be expected that the carrier gas, in greater concentration, should be deposited first and the dopant gas removed afterwards.



Claims 21-22 and 28-29 both require specific temperatures to heat the substrate or the chamber. Chiu teaches that the temperature of the reactor depends upon the amount of energy dissipated by the electrodes (column 6 lines 19-24). Therefore, the variable of reactor temperature depends upon experimental conditions and may be found by routine experimentation. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reactor temperature to be at least either 800 or 1100 °C by routine experimentation absent evidence showing a criticality for the claimed values.

9. Claims 20-22 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al.

With regard to claims 20 and 27, Suzuki et al. includes all the limitations except removing the dopant gas from the exhaust after the carrier gas is removed. However, Suzuki et al. includes removing all gases and depositing them on the substrates or the chamber walls (paragraph 0018) in the procedure. One of ordinary skill in the art would have recognized at the time of the invention that the carrier and dopant gas would deposit on the substrates relative to their properties and concentrations. Therefore, it should be expected that the carrier gas, in greater concentration, should be deposited first and the dopant gas removed afterwards.

Claims 21-22 and 28-29 both require specific temperatures to heat the substrate or the chamber. Suzuki et al. teaches that the temperature of the reactor depends upon the type of gases in the exhaust (paragraph 0048). Therefore, the variable of reactor

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temperature depends upon experimental conditions and may be found by routine experimentation. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reactor temperature to be at least either 800 or 1100 °C by routine experimentation absent evidence showing a criticality for the claimed values.

10. Claims 23-24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. as applied to claims 19, 26, 32-33 and 37 above, and further in view of Chiu.

Suzuki et al. includes the provisions of claims 23-24 and 30 as discussed above for silicon film deposition of a carrier and dopant gas (paragraph 0005 and Table 1).

Suzuki et al. does not include arsine as a dopant gas. Chiu teaches that arsine may be a dopant gas with silicon depending upon the manufacturing process (column 4 lines 10-20) particularly in semiconductor fabrication (column 1 lines 5-24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzuki et al. to include arsine as a dopant gas as taught by Chiu in order to use the process of Suzuki et al. for semiconductor fabrication.

11. Claims 34-35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. as applied to claims 19, 26, 32-33 and 37 above, and further in view of US Patent number 3640513 to Bowie.

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Suzuki et al. includes the provisions of claims 34-35 and 38 as discussed above except for including apertures in the substrates. Bowie teaches using apertures in substrates when extracting exhaust gases in order to aid in the slowing down of the gases and increase their residence time in the baffle area (column 1 lines 55-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzuki et al. to include apertures in the baffled substrates as taught by Bowie in order to aid in the slowing down of the gases and increase their residence time in the baffle area.

12. Claims 34-35 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu as applied to claims 19, 23-26, 30, 32, 33, and 37 above, and further in view of Bowie.

Chiu includes the provisions of claims 34-35 and 38 as discussed above except for including apertures in the substrates. Bowie teaches using apertures in substrates when extracting exhaust gases in order to aid in the slowing down of the gases and increase their residence time in the baffle area (column 1 lines 55-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Chiu to include apertures in the baffled substrates as taught by Bowie in order to aid in the slowing down of the gases and increase their residence time in the baffle area.

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**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kelly Stouffer whose telephone number is (571) 272-2668. The examiner can normally be reached on Monday - Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kelly Stouffer  
Examiner  
Art Unit 1762

kms

  
KATHERINE BAREFORD  
PRIMARY EXAMINER